

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A method of focussing a lens arrangement in a camera which further comprises an image sensor onto which an image is focussed by the lens arrangement and a piezoelectric actuator arranged to drive movement of the lens arrangement in accordance with a control signal applied thereto to vary the focus of the image on the image sensor, the piezoelectric actuator experiencing hysteresis in the position to which it drives the lens arrangement as a function of the control signal, the method comprising:

applying a control signal to the piezoelectric actuator with a value at an extreme of a predetermined range;

changing the control signal monotonically across the predetermined range and at each of a plurality of test values of the control signal during the change of the control signal determining a respective measure of the quality of the focus of the image from the image signal output by the image sensor;

determining, from said respective measures of the quality of the focus of the image, a focus value of the control signal at which the quality of the focus of the image is at an acceptable level;

changing the control signal back to said value at an extreme of said predetermined range; and

changing the control signal monotonically to said focus value.

2. (Currently Amended) A method according to claim 1, wherein said determining of a focus value of the control signal comprises selecting one of said test values of the control signal;

3. (Original) A method according to claim 2, wherein said selecting of one of said values of the control signal comprises selecting the one of said values at which the measure of the quality of the focus of the image is best.

4. (Currently Amended) A method according to ~~any one of the preceding claims~~claim 1, wherein the control signal is a voltage signal.

5. (Currently Amended) A method according to ~~any one of claims 1 to 3~~claim 1, wherein the control signal is a charge signal.

6. (Currently Amended) A method according to ~~any one of the preceding claims~~claim 1, wherein said method is performed repeatedly using the same predetermined range.

7. (Original) A camera comprising:
an image sensor;
a lens arrangement which focusses an image onto the image sensor;
a piezoelectric actuator arranged to drive movement of the lens arrangement in accordance with a control signal applied thereto to vary the focus of the image on the

image sensor, the piezoelectric actuator experiencing hysteresis in the position to which it drives the lens arrangement as a function of the control signal; and

 a control circuit arranged to apply the control signal to the piezoelectric actuator and being operable to automatically focus the image by:

 applying a control signal with a value at an extreme of a predetermined range;

 changing the control signal monotonically across the predetermined range and at each of a plurality of test values of the control signal during the change of the control signal determining a respective measure of the quality of the focus of the image from the image signal output by the image sensor;

 determining, from said respective measures of the quality of the focus of the image, a focus value of the control signal at which the quality of the focus of the image is at an acceptable level;

 changing the control signal back to said value at an extreme of said predetermined range; and

 changing the control signal monotonically to said focus value.

8. (Currently Amended) A camera according to claim 7, wherein said determining of a focus value of the control signal comprises selecting one of said test values of the control signal;—

9. (Original) A camera according to claim 8, wherein said selecting of one of said values of the control signal comprises selecting the one of said values at which the measure of the quality of the focus of the image is best.

10. (Currently Amended) A camera according to ~~any one of claims 7 to 9~~ claim 7,
wherein the control signal is a voltage signal.

11. (Currently Amended) A camera according to ~~any one of claims 7 to 9~~ claim 7,
wherein the control signal is a charge signal.

12. (Currently Amended) A camera according to ~~any one of claims~~ claim 7 to 11,
wherein the control circuit is operable to automatically focus the image repeatedly by
said steps using the same predetermined range.

13. (Original) A method of focussing a lens arrangement in a camera which further
comprises an image sensor onto which an image is focussed by the lens arrangement
and a piezoelectric actuator arranged to drive movement of the lens arrangement in
accordance with a control signal applied thereto to vary the focus of the image on the
image sensor, the piezoelectric actuator experiencing hysteresis in the position to which
it drives the lens arrangement as a function of the control signal, the method
comprising:

applying a control signal to the piezoelectric actuator with a value at an extreme
of a predetermined range;

changing the control signal monotonically across the predetermined range and at
each of a plurality of values of the control signal during the change of the control signal

determining a respective measure of the quality of the focus of the image from the image signal output by the image sensor;

 determining, from said respective measures of the quality of the focus of the image, a focus value of the control signal at which the quality of the focus of the image is at an acceptable level;

 determining a modified value of the control signal which is capable, by monotonic change of the control signal to the modified value, of moving the lens arrangement to the position at which it was located when the control signal was at the focus value of the control signal, taking into account the hysteresis of the piezoelectric actuator; and
 changing the control signal monotonically to said modified value.

14. (Currently Amended) A method according to claim 13, wherein said determining of a focus value of the control signal comprises selecting one of said test values of the control signal;—

15. (Original) A method according to claim 14, wherein said selecting of one of said values of the control signal comprises selecting the one of said values at which the measure of the quality of the focus of the image is best.

16. (Currently Amended) A method according to ~~any one of claims~~claim 13 to 15, wherein the control signal is a voltage signal.

17. (Currently Amended) A method according to ~~any one of claims~~claim 13 to 15, wherein the control signal is a charge signal.

18. (Currently Amended) A method according to ~~any one of claims~~claim 13 to 17, wherein said method is performed repeatedly using the same predetermined range.

19. (Original) A camera comprising:
an image sensor;
a lens arrangement which focusses an image onto the image sensor;
a piezoelectric actuator arranged to drive movement of the lens arrangement in accordance with a control signal applied thereto to vary the focus of the image on the image sensor, the piezoelectric actuator experiencing hysteresis in the position to which it drives the lens arrangement as a function of the control signal; and
a control circuit arranged to apply the control signal to the piezoelectric actuator and being operable to automatically focus the image by:
applying a control signal to the piezoelectric actuator with a value at an extreme of a predetermined range;
changing the control signal monotonically across the predetermined range and at each of a plurality of values of the control signal during the change of the control signal determining a respective measure of the quality of the focus of the image from the image signal output by the image sensor;

determining, from said respective measures of the quality of the focus of the image, a focus value of the control signal at which the quality of the focus of the image is at an acceptable level;

determining a modified value of the control signal which is capable, by monotonic change of the control signal to the modified value, of moving the lens arrangement to the position at which it was located when the control signal was at the focus value of the control signal, taking into account the hysteresis of the piezoelectric actuator; and changing the control signal monotonically to said modified value.

20. (Currently Amended) A camera according to claim 19, wherein said determining of a focus value of the control signal comprises selecting one of said test values of the control signal;

21. (Original) A camera according to claim 20, wherein said selecting of one of said values of the control signal comprises selecting the one of said values at which the measure of the quality of the focus of the image is best.

22. (Currently Amended) A camera according to ~~any one of claims~~claim 19 to 21, wherein the control signal is a voltage signal.

23. (Currently Amended) A camera according to ~~any one of claims~~claim 19 to 22, wherein the control signal is a charge signal.

24. (Currently Amended) A camera according to ~~any one of claims~~claim 19 to 23,
wherein the control circuit is operable to automatically focus the image repeatedly by
said steps using the same predetermined range.

Claims 25-38 (Canceled)